What is claimed is:

1. A hard magnetic garnet material having a chemical composition of $(Bi_{3-a-b-c}Gd_aTb_bYb_c)Fe_{(5-w)}M_wO_{12}$ (where, M is at least one element selected from the group consisting of Ga, Al, Ge, Sc, In, Si and Ti, $0.5 \leqq a+b+c \leqq 2.5$, $0.2 \leqq w \leqq 2.5$) and exhibiting rectangular magnetic hysteresis.

2. A hard magnetic garnet material according to claim 1, wherein $1.0 \leqq a+b+c \leqq 2.3$ and $0.3 \leqq w \leqq 2.0$.

3. A hard magnetic garnet material according to claim 1, wherein $0.1 \leqq a \leqq 1.5$, $0.3 \leqq b \leqq 2.0$, $0.1 \leqq c \leqq 1.5$ and $0.4 \leqq w \leqq 1.5$.

4. A hard magnetic garnet material according to claim 1, wherein Faraday rotary moment in a temperature range of −40°C to +85°C with a wavelength of 1550 nm, is 700°/cm or more.

5. A hard magnetic garnet material according to claim 1, wherein even after an external magnetic field equal to or greater than saturation magnetization exhibited by said hard magnetic garnet material is applied and then said external magnetic field is removed, Faraday rotary moment is substantially maintained.

6. A hard magnetic garnet material according to claim 1, wherein the temperature property of the Faraday rotation angle

in a temperature range of -40°C to +85°C with a wavelength of 1550 nm, is 13% or less of a target value thereof.

7. A hard magnetic garnet material according to claim 1, wherein the wavelength property of the Faraday rotation angle at room temperature with a wavelength of 1500 to 1600 nm, is 8% or less of a target value thereof.

8. A hard magnetic garnet material according to claim 1, wherein insertion loss at room temperature with a wavelength of 1550 nm is 0.1 dB or less.

9. A Faraday rotator that uses a bismuth-substituted rare earth iron garnet single crystal and rotates the polarization plane of incident light, said single crystal necessarily containing Gd, Tb and Yb as rare earth elements and exhibiting substantially rectangular magnetic hysteresis,

wherein, Faraday rotary moment in a temperature range of -40°C to +85°C with a wavelength of 1550 nm, is 700°/cm or more and the temperature property of the Faraday rotation angle in said temperature range with said wavelength, is 13% or less of a target value thereof,

the wavelength property of the Faraday rotation angle at room temperature with a wavelength of 1500 to 1600 nm, is 8% or less of a target value thereof, and

insertion loss at room temperature with a wavelength of 1550 nm, is 0.1 dB or less.

10. A Faraday rotator according to claim 9, wherein said single crystal contains, in addition to Gd, Tb and Yb, at least one element selected from the group consisting of La, Ce, Pr, Nd, Pm, Sm, Eu, Dy, Lu, Tm, Er, Ho, Y, and Ca.

11. A Faraday rotator according to claim 10, wherein said Faraday rotary moment in a temperature range of -40°C to +85°C with a wavelength of 1550 nm, is 800°/cm or more.

12. A Faraday rotator according to claim 9, wherein said temperature property is 11% or less of a target value thereof.

13. A Faraday rotator according to claim 9, wherein said wavelength property is 7% or less of a target value thereof.

14. A Faraday rotator according to claim 9, wherein said insertion loss is 0.07 dB or less.

15. An optical device comprising:

a first optical element into which forward light enters;

a second optical element placed opposite to said first optical element in a predetermined distance from which said forward light is emitted; and

a Faraday rotator placed between said first optical element and said second optical element, which rotates the polarization plane of light that has passed through said first

optical element and emits said light toward said second optical element and blocks passage of backward light that has passed through said second optical element,

wherein said Faraday rotator is constructed of a bismuth-substituted rare earth iron garnet single crystal having a chemical composition of $(Bi_{3-a-b-c}Gd_aTb_bYb_c)Fe_{(5-w)}M_wO_{12}$ (where, M is at least one element selected from the group consisting of Ga, Al, Ge, Sc, In, Si and Ti, $0.5 \leqq a+b+c \leqq 2.5$, $0.2 \leqq w \leqq 2.5$), and

said bismuth-substituted rare earth iron garnet single crystal exhibits rectangular magnetic hysteresis.

16. An optical communication system comprising:

an optical transmitter that issues an optical signal converted from an electric signal;

an optical transmission line that transmits said optical signal issued form said optical transmitter; and

an optical receiver that receives said optical signal sent through said optical transmission line and converts said received optical signal to an electric signal,

wherein said optical transmitter comprising:

an electro-optic converter that converts said electric signal to said optical signal; and

an optical device placed between said electro-optic converter and said optical transmission line,

wherein a Faraday rotator composing said optical device is constructed of a bismuth-substituted rare earth iron garnet

single crystal having a chemical composition of $(Bi_{3-a-b-c}Gd_aTb_bYb_c)Fe_{(5-w)}M_wO_{12}$ (where, M is at least one element selected from the group consisting of Ga, Al, Ge, Sc, In, Si and Ti, $0.5 \leqq a+b+c \leqq 2.5$, $0.2 \leqq w \leqq 2.5$) and said bismuth-substituted rare earth iron garnet single crystal exhibits rectangular magnetic hysteresis.

17. A method of manufacturing a Faraday rotator using a bismuth-substituted rare earth iron garnet single crystal exhibiting substantially rectangular magnetic hysteresis, comprising:

a single crystal growing step of growing a bismuth-substituted rare earth iron garnet single crystal having a chemical composition of $(Bi_{3-a-b-c}Gd_aTb_bYb_c)Fe_{(5-w)}M_wO_{12}$ (where, M is at least one element selected from the group consisting of Ga, Al, Ge, Sc, In, Si and Ti, $0.5 \leqq a+b+c \leqq 2.5$, $0.2 \leqq w \leqq 2.5$); and

a magnetic heat treatment step of applying heat treatment to said single crystal while applying an external magnetic field thereto.

18. A method of manufacturing a Faraday rotator that uses a bismuth-substituted rare earth iron garnet single crystal and rotates the polarization plane of incident light, comprising:

a single crystal growing step of growing a bismuth-substituted rare earth iron garnet single crystal

having a chemical composition of $(Bi_{3-a-b-c}Gd_aTb_bYb_c)\ Fe_{(5-w)}M_wO_{12}$ (where, M is at least one element selected from the group consisting of Ga, Al, Ge, Sc, In, Si and Ti, $0.5 \leqq a+b+c \leqq 2.5$, $0.2 \leqq w \leqq 2.5$); and

a cutting step of cutting said single crystal obtained in said single crystal growing step, using a wire saw.

19. A method of manufacturing a Faraday rotator that uses a bismuth-substituted rare earth iron garnet single crystal exhibiting substantially rectangular magnetic hysteresis, comprising:

a single crystal growing step of growing said single crystal; and

a magnetic heat treatment step of applying heat treatment to said single crystal while applying an external magnetic field thereto.

20. A method of manufacturing a Faraday rotator according to claim 19, wherein magnetic heat treatment is applied at temperatures of 1100°C or lower in said magnetic heat treatment step.

21. A method of manufacturing a Faraday rotator according to claim 20, wherein in said magnetic heat treatment step, said single crystal is held at said temperatures for a predetermined time and then cooled down while applying said external magnetic field thereto.

22. A method of manufacturing a Faraday rotator according to claim 19, wherein in said magnetic heat treatment step, said external magnetic field is 300 Oe or more.

23. The method of manufacturing a Faraday rotator according to claim 19, wherein said magnetic heat treatment step is carried out in an irreducible atmosphere.

24. A Faraday rotator that uses a bismuth-substituted rare earth iron garnet single crystal and rotates the polarization plane of incident light,

wherein said single crystal has a chemical composition of $(Bi_{3-a-b-c}Gd_aTb_bYb_c)Fe_{(5-w)}M_wO_{12}$ (where, M is at least one element selected from the group consisting of Ga, Al, Ge, Sc, In, Si and Ti, $0.5 \leqq a+b+c \leqq 2.5$, $0.2 \leqq w \leqq 2.5$) and has coercive force of 600 Oe or more at room temperature through magnetic heat treatment.

25. A method of manufacturing a bismuth-substituted rare earth iron garnet single crystal exhibiting substantially rectangular magnetic hysteresis, comprising:

a step of growing said single crystal through a liquid phase epitaxial growth method;

a step of making said single crystal a single magnetic domain while heating or cooling said single crystal.

26. An optical device comprising:

a first optical element into which forward light enters;

a second optical element placed opposite to said first optical element in a predetermined distance from which forward light is emitted; and

a Faraday rotator placed between said first optical element and said second optical element, which rotates the polarization plane of light that has passed through said first optical element and emits said light toward said second optical element and blocks passage of backward light that has passed through said second optical element,

wherein said Faraday rotator is constructed of a bismuth-substituted rare earth iron garnet single crystal, exhibits rectangular magnetic hysteresis by being heated or cooled with an external magnetic field applied thereto in a direction in which a magnetic field is formed approximately parallel to said forward light and maintains coercive force of 600 Oe or more at room temperature.

27. A method of manufacturing a Faraday rotator that uses a bismuth-substituted rare earth iron garnet single crystal and rotates the polarization plane of incident light, comprising:

a single crystal growing step of growing said single crystal; and

a cutting step of cutting said single crystal obtained in said single crystal growing step using a wire saw.

28. A Faraday rotator using a bismuth-substituted rare earth iron garnet single crystal, comprising front and back surfaces placed opposite to each other in a predetermined distance and sides formed around said front and back surfaces, wherein fine projections and depressions are formed uniformly on at least one side of said sides.

29. The Faraday rotator according to claim 28, wherein said single crystal exhibits substantially rectangular magnetic hysteresis.

30. An optical device comprising:

a first optical element into which forward light enters;

a second optical element placed opposite to said first optical element in a predetermined distance from which said forward light is emitted; and

a Faraday rotator placed between said first optical element and said second optical element, which rotates the polarization plane of light that has passed through said first optical element and emits said light toward said second optical element and blocks passage of backward light that has passed through said second optical element,

wherein said Faraday rotator is constructed of a bismuth-substituted rare earth iron garnet single crystal, and

said single crystal includes front and back surfaces placed opposite to each other in a predetermined distance and sides formed around said front and back surfaces and at least one side of said sides has an isotropic pattern.

31. An optical device according to claim 30, wherein said single crystal is sandwiched between said first optical element and said second optical element with said first optical element and said second optical element are adhered to said single crystal using an adhesive.